

REQUEST FOR RECONSIDERATION

Applicants thank Examiner Moore for the courteous and helpful discussion of October 31, 2005. During the discussion, it was established that elastic (e.g., rubber) polysiloxane compositions have crosslinking (e.g., a three dimensional molecular structure).

Claim 1 is amended herein to require that the composition when cured is non-elastic and has a penetration of from 10 to 200 according to JIS K2207. Applicants submit that the amendment to Claim 1 does not raise any new issues for consideration because the “Cured product”, “non-elastic” and “penetration” limitations were present in at least previously presented Claims 4, 18 and 19.

Applicants submit that those of ordinary skill in the art readily recognize that a crosslinked composition cannot be obtained from components that have bonding units only at the terminal ends. The composition of Claim 1 includes a diorganopolysiloxane that has alkenyl groups only at both ends of a molecular chain (e.g., the alkenyl groups are present only at the chain terminus). The claimed composition further contains an organohydrogen polysiloxane that has Si-H groups present only at the termini of a molecular chain. Thus, because the alkenyl groups and the Si-H groups are only present at the chain termini of molecular chains, it is not possible to form a three dimensional molecular structure necessary in order to obtain an elastic structure. Claim 1 has been amended to explicitly state that a cured product obtained by curing the composition is non-elastic.

Applicants traverse the anticipation rejection in view of Okinoshima on the grounds that the cited prior art does not disclose or suggest a composition that may be cured to form a non-elastic material. For example, throughout Okinoshima, it is stated that the prior art composition is cured to form a rubber, for example:

The composition scarcely generates hydrogen gas during storage so as to have an excellent storage stability and provides a cured product excellent in heat resistance, electrical insulating properties, and adhesion to various metals, semiconductors, etc.

while keeping good physical properties as a rubber. (See Abstract; underline added).

The cured products obtainable from the prior art compositions are described in columns 10 and 11 of Okinoshima as follows:

The cured product of the present invention thus obtained thus exhibits good physical properties (hardness, tensile strength, elongation, etc.) as a rubber...(col. 10, lines 65-67; underline added).

Okinoshima provides a number of examples, none of which requires that the diorganopolysiloxane contain only terminally bonded alkenyl groups and that the organohydrogen polysiloxane contains only terminally bonded Si-H groups.

Thus, as noted above in the specification of Okinoshima, the prior art does not disclose or suggest that a non-elastic composition may be obtained by curing the prior art compositions. Applicants submit that the prior art's description of the cured composition obtained by curing the prior art composition as a rubber, proves that the prior art compositions and the claimed composition are different (e.g., the claimed compositions are non-elastic). Not only does the prior art not disclose or suggest a composition that may be cured to provide a non-elastic material, the prior art teaches away from such an embodiment by describing the prior art cured material as one that is a rubber.

Applicants submit the amendment to Claim 1 does not raise any new issues for consideration because previously presented dependent Claim 18 included a limitation that a cured article obtained by curing the claimed composition is non-elastic. Previously presented dependent Claim 19 required that an article obtained by curing the composition have a penetration of from 10 to 200 according to JISK 2207.

Applicants submit that those of ordinary skill in the art would readily recognize that the examples of Okinoshima describe compositions that may include the formation of a three-dimensional structure such as by crosslinking. The elastic (e.g., rubber-like) properties of

materials obtained by curing the prior art compositions are described in the tables of Okinoshima. For example, Table 1 discloses the elongation and hardness properties of the prior art cured compositions. The properties of the cured prior art compositions may be compared with the properties of the non-elastic cured material obtained from the claimed composition. Hardness according to Asker C is not measurable for Example 1 of the present specification (an inventive example). In comparison, the hardness of the cured materials of the prior art are greater than 47 (see Table 1 in col. 14 of Okinoshima). The present specification also provides a comparative example having crosslinking (e.g., elastic properties). The penetration in the inventive example is 96.5 which is in contrast to the comparative example, which is elastic, wherein penetration is not measurable. Thus the claimed compositions are different from the prior art rubber compositions of Okinoshima.

Applicants submit that it is readily recognized by those of ordinary skill in the art that a three-dimensional structure is necessary to obtain elastic (e.g., rubber) properties in a cured polysiloxane-type material. Because Okinoshima describes compositions which are cured to form a rubber, the prior art compositions are not disclosed to form non-elastic material. Applicants submit that the prior art compositions cannot inherently provide a non-elastic material as demonstrated by the hardness and penetration properties disclosed in Okinoshima and in the examples of the present specification. Applicants therefore submit that the presently claimed invention is not anticipated by the rubber compositions of Okinoshima. Applicants further submit that the claimed invention is not obvious in view of Okinoshima in view of the fact that Okinoshima nowhere discloses or suggests that the prior art compositions may be used to form non-elastic materials having certain penetration properties.

Applicants respectfully request withdrawal of the rejection and the allowance of all now-pending claims.

The heat conductive silicone composition of present Claim 1 comprises an organopolysiloxane having alkenyl groups, a heat conductive filler, a platinum group curing catalyst and an organohydrogen polysiloxane component. The organohydrogen polysiloxane component is one that consists of an organohydrogen polysiloxane having hydrogen atoms directly bonded to silicon atoms (i.e., Si-H groups) only at both ends of a molecular chain. Thus, Claim 1 excludes organohydrogen polysiloxanes that have hydrogen atoms bonded to a silicon atom at any position along a molecular chain other than at the chain termini (e.g., Claim 1 excludes organohydrogen polysiloxanes having Si-H groups along a polysiloxane backbone).

Applicants draw the Office's attention to Claim 21 wherein the composition of Claim 1 is described as one "wherein all of the organohydrogen polysiloxanes have hydrogen atoms directly bonded to silicon atoms only at both ends of a molecular chain."

The Office rejected the claims as anticipated in view of a patent to Okinoshima (U.S. 6,069,201). Applicants traverse the rejection on the grounds that Okinoshima does not disclose at least one of the present claim limitations; namely, Okinoshima does not disclose that all of the organohydrogen polysiloxanes must be compounds that have Si-H groups only at the ends of a molecular chain.

It appears that the Office entered the anticipation rejection on the grounds that Okinoshima may disclose one or more species of organohydrogen polysiloxane that may have Si-H groups at the ends of a molecular chain (e.g., the Office cites to column 4, lines 53-54 and 66-67 and column 5, lines 20-25 of Okinoshima). However, Okinoshima does not disclose the present claim limitation that the organohydrogen polysiloxane component must consist of only those materials which have hydrogen atoms bonded to a silicon atom only at the ends of a molecular chain (i.e., Claim 1) or that all of the organohydrogen polysiloxanes have hydrogen atoms directly bonded to silicon atoms only at both ends of a molecular chain

(i.e., Claim 21). In fact, Okinoshima describes the prior art zinc oxide-filled composition as one that must contain “an organohydrogen polysiloxane containing at least two hydrogen atoms bonded to silicon atoms in its molecule” (column 19, lines 52-54). Okinoshima does not describe anywhere in the prior art patent that all of the organohydrogen polysiloxane materials must be ones that have H atoms bonded to Si atoms only at both ends of a molecular chain.

The Office appears to believe that the disclosure of any organohydrogen polysiloxane having Si-H groups only at both ends of a molecular chain in Okinoshima is sufficient to anticipate the presently claimed invention. Applicants point out that in order for Okinoshima to anticipate the presently claimed invention, Okinoshima must teach all the present claim limitations. As noted above, Okinoshima does not disclose that the prior art compositions must contain only organohydrogen polysiloxane materials having Si-H groups at both ends of a molecular chain. Thus the Office’s reliance on M.P.E.P. §2131.02 (see page 2, paragraph 2 of the Office Action of August 23, 2005) in support of the rejection is misplaced.

Because Okinoshima does not disclose all of the present claim limitations, Okinoshima cannot anticipate the presently claimed invention. Applicants respectfully request withdrawal of the rejection.

Applicants submit that it is readily recognized by those of ordinary skill in the art that the chemical reaction of an organohydrogen polysiloxane and an organopolysiloxane having alkenyl groups will provide a cured product having different properties in comparison to the chemical reaction of an organohydrogen polysiloxane having an Si-H groups positioned along the backbone of the molecular chain and the same organo polysiloxane having alkenyl groups. A different degree and different nature of bonding between the organohydrogen polysiloxane component and the organopolysiloxane having alkenyl groups necessarily occurs because the centers of reaction on the hydrogen organo-polysiloxane are different.

Applicants further submit that those of ordinary skill in the art would recognize that the physical properties of the two cured products derived from the aforementioned reactions may also be different.

Applicants have in fact demonstrated the difference between the claimed compositions and the compositions of the prior art. In the specification as originally filed, Table 1 of the specification (see page 10) provides a comparison of a cured silicon-containing composition according to the present invention and a cured silicon composition that contains an organohydrogen polysiloxane component that has Si-H groups at positions other than at both ends of a molecular chain. Table 1 is reproduced below for convenience.

Table 1

Measurement results			Example 1	Comparative Example 1
Compression stress (MPa)	10% compression	Peak	0.45	0.46
		After 1 min	0.02	0.27
	20% compression	Peak	0.68	0.87
		After 1 min	0.03	0.55
	30% compression	Peak	0.99	1.40
		After 1 min	0.05	0.92
	40% compression	Peak	1.46	2.10
		After 1 min	0.11	1.4
	50% compression	Peak	2.15	3.11
		After 1 min	0.30	2.18
Thermal resistance (°C/W)			0.70	1.21
Hardness (Asker C)			-*	45
Penetration			96.5	-*

* unmeasurable

The inventive (i.e., Example 1) and Comparative Example 1 have substantial differences in elasticity. This difference in elasticity is reflected in the hardness and penetration properties of the two cured silicon-containing compositions. Example 1 has unmeasurable hardness whereas Comparative Example 1 has a hardness of 45 on the Asker C

scale. A further substantial difference is seen in the penetration properties where the inventive example exhibits a penetration of 96.5 whereas the penetration on the comparative example is not measurable. This difference may be due to a number of factors including: (i) difference in the elastic behavior, (ii) the difference in molecular bonding that occurs in the cured invention composition and (iii) the cured comparative composition.

Applicants submit that the claimed invention is not obvious in view of curable silicon-containing compositions that have an organohydrogen polysiloxane component with Si-H groups at positions other than at both ends of a molecular chain. Applicants thus submit that the presently claimed invention is not obvious in view of the prior art cited by the Examiner.

The Office asserts that the subject matter of Claims 19 and 20 is also anticipated by Okinoshima. The Office bases the allegation of anticipation upon an assertion that the properties recited in the respective claims must inherently be present in the composition of Okinoshima (see last sentence on page 2 of the Office Action of August 23, 2005).

Applicants traverse the Office's assertion and direct the Office's attention to the Examples and Tables of physical properties of Okinoshima that describe the prior art cured compositions (see further discussion below).

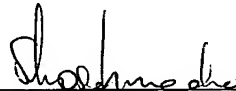
The Examples and Comparative Examples of Okinoshima contain an organohydrogenpolysiloxane identified as methylhydrogen polysiloxane (column 11, lines 38). The physical properties of the prior art are described in Tables 1-3. It is readily evident from the tables that the hardness of the prior art examples is similar to the hardness of Comparative Example 1 of the present specification. As was mentioned above, the hardness of the inventive example is not measurable. This difference in hardness and penetration may be related to the non-elastic nature of the cured invention compositions in comparison to the elastic (e.g., rubbery) form observed for cured compositions containing an organohydrogen polysiloxane having Si-H groups along a polymer chain.

Thus not only have Applicants shown that the cured invention compositions are different from cured compositions which contain a hydrogen organopolysiloxane that is different from the one required by the present claims, the prior art cited by the Office provides further similar evidence that the cured prior art compositions are substantially different from the cured invention compositions.

As discussed above in detail, Applicants submit that the presently claimed invention is novel and not obvious in view of the prior art relied upon by the Office and respectfully request reconsideration and withdrawal of the rejections.

Respectfully submitted,

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